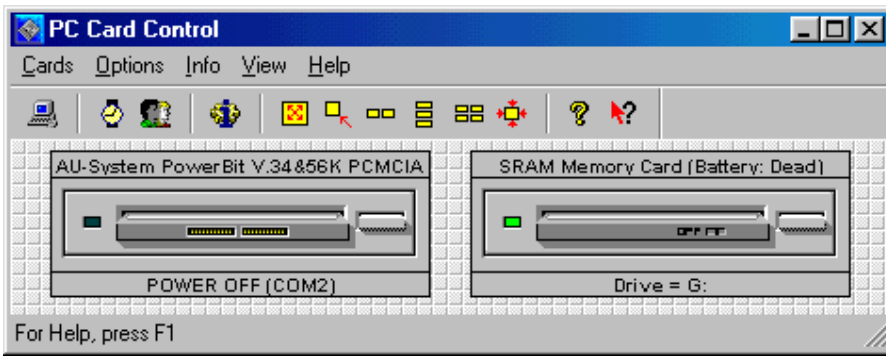
CardWare®
for Windows 98/ME

R 7.00



User's Guide

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PCCard for Windows 98/ME

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Evaluation and Registration

You are licensed to use CardWare free-of-charge during a 14-day period for evaluation purposes only. Any use of the CardWare evaluation software other than evaluation, represents a breach of this license and may result in legal prosecution.

See the README.TXT file in you CardWare installation directory for information about how to contact APSoft and how to license CardWare.

The Serial Number

APSoft issues the serial number when you purchase CardWare. Once entered, it will transform the evaluation version of CardWare into a full retail version. The serial number is valid for free updates during a period of one year. Any update of CardWare released by APSoft during this time can be installed using the same serial number. After the annual expiry date the serial number will still be able to use your copy of CardWare without time limitation, but you will not be able to upgrade any longer free-of-charge.

If you want to continue to receive free updates of CardWare, you will need to purchase an upgrade. You will receive a remainder two weeks before the serial number expires. For details on our upgrade policy and price please check our WEB site http://www.tssc.de/web/policies.htm.

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Introduction

Intention of This Manual

This manual provides an overview of CardWare 7.0 for Windows 98/ME. It does not fully describe all functions of CardWare. If you are looking for a complete description, please consult the online help of the product by selecting **CardWare Help** from the CardWare Group in the start menu, or by pressing F1 while PC Card Control is running.

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C H A P T E R 1

CardWare Basics

This chapter gives an overview of how CardWare, using your computer resources, makes PC Cards work for you.

What Is CardWare for Windows 98/ME?

CardWare is a total software solution for PC Cards that complies with the PC Card Standards. It is designed to effortlessly manage the complexity of plugging and unplugging the latest generation of PC Cards. Main CardWare features are listed below:

- Support for all types of memory cards. SRAM, FLASH and ATA cards are supported. The FLASH cards support includes support of FTL (Flash Translation Layer) and FFSII (Microsoft Flash File System II). CardWare allows you to use storage cards (memory cards and PC Card ATA flash or hard disk drives) as if they were normal floppies or hard disk drives.
- CardWare allows you to assign User-selectable parameters such as COM and LPT port number, drive letters etc. to specific PC Cards.
- CardWare allows you to put the card into various power-saving modes. This feature allows the user to reduce the power consumption of the system, thus conserving the notebook's battery.
- CardWare centralizes all aspects of PC Card support information in one place.
- CardWare can configure the PC Card w/o drivers installed. CardWare can install and configure PC Cards on your system, so standard software, not just PC Card-specific software, can access the card.
- CardWare provides the industrial standard Card Services API, defined in PC Card Standard, for Win32 applications.

CardWare works in the background so applications can use your PC Cards.

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C H A P T E R 2

Installing CardWare

This chapter explains how to install CardWare for Windows 98/ME.

- Make sure you have the correct equipment and operating system to install and run CardWare. See the detailed list of system requirements on the following page.

NOTE: *In some cases, your system may be shipped with CardWare preinstalled. Please check to see if CardWare is already installed, before going through the installation procedure described in this chapter.*

CardWare Installation Options

1. Download CardWare from APSoft website

The latest version of CardWare is always available in the download area of APSoft's WEB site (http://www.tssc.de). You can always download CardWare from the WEB and use it as an update to a previously purchased version, or as evaluation software.

In the download area of APSoft WEB site, click on the floppy icon to start the download. If you are using Microsoft(R) Internet Explorer, the File Download window will open. Click on 'Save' to store the file onto your hard disk.

If you want to update an existing CardWare version, you will need to uninstall the existing version now.

After download please run this executable file.

When the splash screen appears choose "Install CardWare". The installer will automatically unpack the self-executable file to your temporarily sub-directory and will start the CardWare Setup automatically.

If you are using CardWare for product evaluation please note:

- You are licensed to use CardWare free-of-charge during a 14-day period for evaluation purposes only.

- Any use of the CardWare evaluation software other than evaluation, represents a breach of this license and may result in legal prosecution!

Unless you enter the valid serial number at the end of the CardWare installation, the software will function for 14 days in evaluation mode.

If you are satisfied with the result of your evaluation please contact mailto:sales@tssc.de to purchase the serial number.

Once entered, the serial number will transform the evaluation version of CardWare into the full retail version.

2. Purchase CardWare on CD-ROM:

After inserting the CardWare CD-ROM into your computer, the AUTORUN program will start automatically. Please choose "Install CardWare" and the CardWare setup will automatically start.

In the case the AUTORUN program will not start on your computer, please go to the directory on your CardWare CD-ROM and run SETUP.EXE.

The CardWare serial number is located on the inside of your CardWare package.

Evaluation and Registration

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Any use of the CardWare evaluation software other than evaluation, represents a breach of this license and may result in legal prosecution.

The Serial Number

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If you want to continue to receive free updates of CardWare, you will need to purchase an upgrade. You will receive a remainder two weeks before the serial number expires. For details on our upgrade policy and price please check our WEB site http://www.tssc.de/web/policies.htm.

What Happens During Installation

The CardWare Setup program automatically installs CardWare on your system. The program copies all CardWare components onto your system and modifies the Windows registry as necessary. The installation process does the following:

1. Lets you specify the location of CardWare.
2. Copies CardWare files to your system (for list of installed files see the Appendix).
3. Creates a CardWare program folder and adds program icons to the folder.
4. Creates a CardWare program folder and adds program icons to the folder.

Starting the Program

Before You Start

1. Before you install CardWare, be sure your system meets these minimum requirements:

Component	Description
PC Card controller	At least one socket using one of the supported controller ICs (check the README file for the latest information)
Hard Disk	Approximately 8 MB free space (without Acrobat Reader installation)
CD-ROM Drive	CD-ROM drive (during install process from CDROM)
Operating system	Microsoft Windows 98/98SE/ME. ***NOT*** Windows 95
System	Processor and RAM sufficient to support Windows 98/98SE/ME

Adding the Program

During the installation, you can move backward or forward through the screens, until the program starts copying files to the destination drive. At any time during the installation process, you can cancel setup and exit.

1. Start Windows.
2. Insert CardWare CD-ROM in the CD-ROM drive. CardWare setup procedure will start automatically. If CardWare setup program will not start automatically then perform steps 3, 4 and 5, otherwise go to step **Error! Reference source not found.**

3. Open the Windows Control Panel. Click **Add/Remove Programs**. In the **Install/Uninstall** tab, click **Install**.

4. Follow the prompt to insert the CardWare installation medium in the drive.

5. Click **Next,** then confirm or edit the command line for the CardWare installation program. Click **Finish** (this button title is misleading — you are finished with the Windows installation utility, but just starting CardWare installation).

6. Wait while the setup program loads. This screen appears:

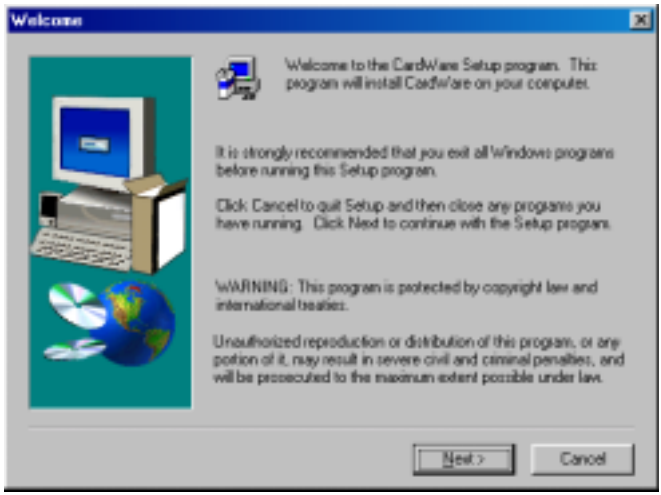
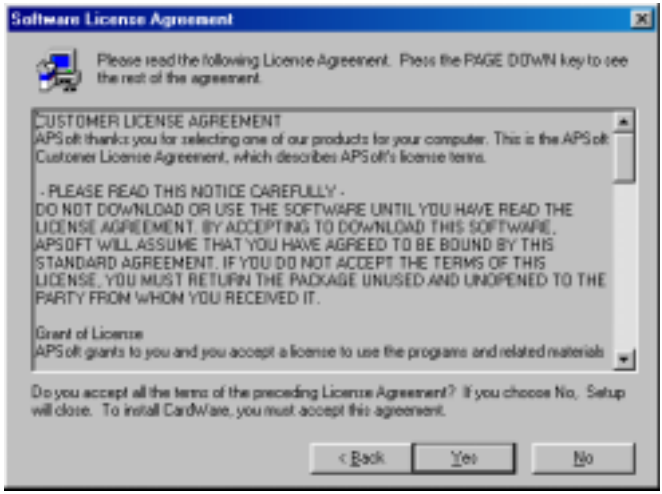

Welcome
Welcome to the CardWare Setup program. This program will install CardWare on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

Figure 1: CardWare Setup Welcome

7. Click Next, read the license agreement.


Software License Agreement
Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.
CUSTOMER LICENSE AGREEMENT
APSoft thanks you for selecting one of our products for your computer. This is the APSoft Customer License Agreement, which describes APSoft's license terms.
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Grant of License
APSoft grants to you and you accept a license to use the programs and related materials
Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install CardWare, you must accept this agreement.
< Back
Yes
No

Figure 2: CardWare License Agreement

8. Please read the license agreement. If you don't accept it then click **No**, and the setup will close. If you accept it click **Yes,** and the screen with CardWare destination directory appears:

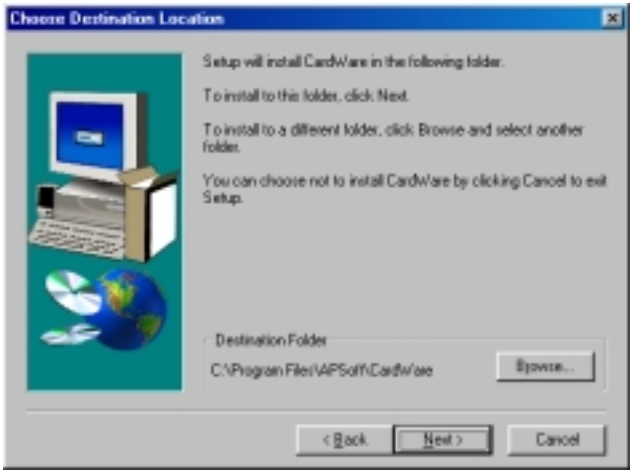
Choose Destination Location
Setup will install CardWare in the following folder.
To install to this folder, click Next.
To install to a different folder, click Browse and select another folder.
You can choose not to install CardWare by clicking Cancel to exit Setup.
Destination Folder
C:\Program Files\APSoft\CardWare
Browse...
< Back
Next >
Cancel

Figure 3: CardWare Setup Destination Directory

9. Confirm the destination directory for CardWare, or select a different one. Then click **Next**. Select Program Folder dialog appears.

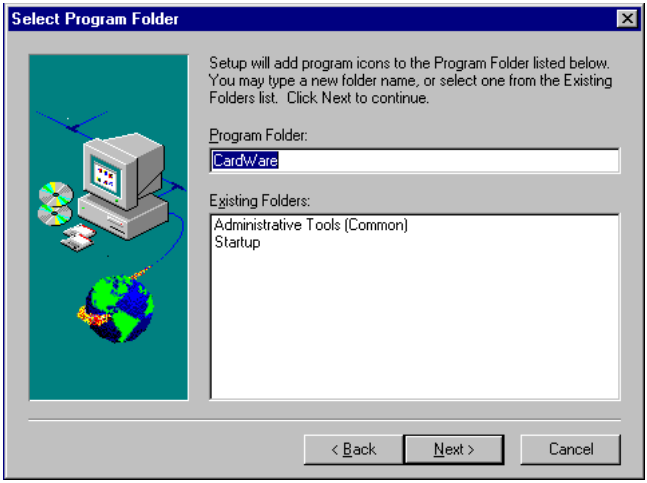
Select Program Folder
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the Existing Folders list. Click Next to continue.
Program Folder:
CardWare
Existing Folders:
Administrative Tools (Common)
Startup
< Back
Next >
Cancel

Figure 4: CardWare Setup Group Selection

10. Confirm or edit the name of the program folder here, and click the **Next** button. The Start Copying Files dialog appears.

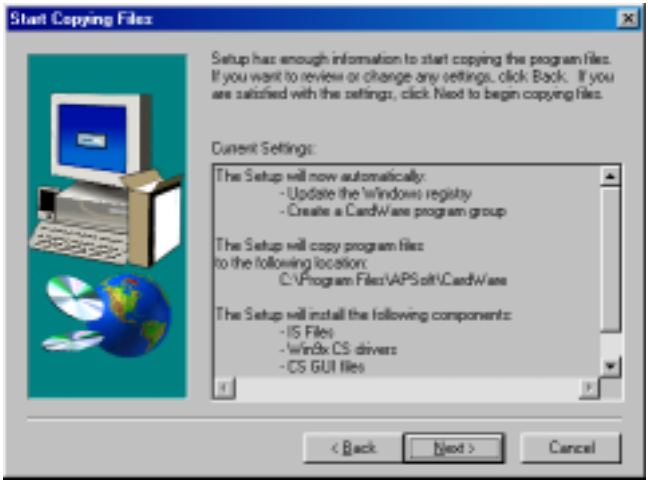
Start Copying Files
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
The Setup will now automatically:
- Update the Windows registry
- Create a CardWare program group
The Setup will copy program files to the following location:
C:\Program Files\APSoft\CardWare
The Setup will install the following components:
- IS Files
- Win9x CS drivers
- CS GUI files
< Back
Next >
Cancel

Figure 5: Start Copying Files

Verify Current Setup settings and click **Next** button.

Finishing the Installation

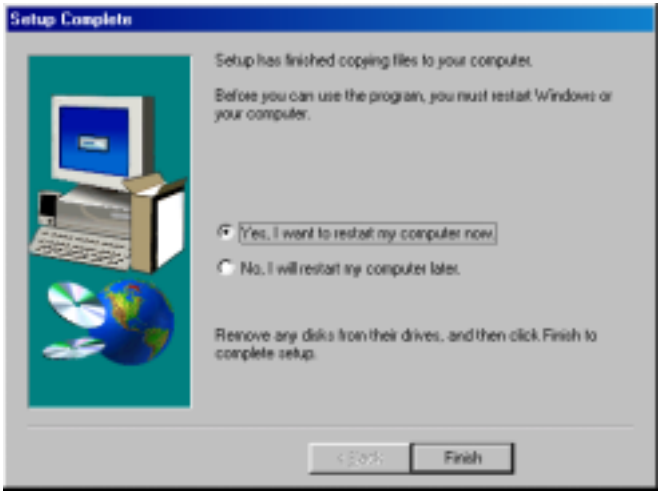
Setup Complete
Setup has finished copying files to your computer.
Before you can use the program, you must restart Windows or your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish

Figure 6: CardWare Setup Completed

Follow the program instructions to complete the installation. When the installation of CardWare is complete and your system files updated, remove the installation medium and reboot your computer to activate CardWare.

Uninstalling CardWare

To remove CardWare from your system, use the CardWare Uninstall program:

1. Start Windows.
2. Select **Uninstall** from the CardWare group.
3. Follow the program prompts.
4. After the program is removed, delete any remaining CardWare files and directories.

NOTE: *If you install CardWare more than once, without removing it after each installation, the CardWare program group remains even after you run the CardWare Uninstall program. The reason is rather technical, but to summarize, each subsequent time you run Install, this program detects the existing program group, so it does not create another program group. Therefore, when you run Uninstall, there is no record of creating a program group, so Uninstall does not remove it.*

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C H A P T E R 3

CardWare User Interface

CardWare User Interface consists of two main components:

1. PC Card Control is a desktop utility that gives you easy access to the most frequently used card control functions, like "Card Power On/Off", "Card Stop/Start", "Card Reconfigure" and so on. The menus and commands available in PC Card Control vary, depending on the type of PC Cards you are using. It gives you easy access to the information about your PC Card and its configuration.

   PC Card Control allows you to assigning ports (for serial or parallel cards) or associated application (which may be automatically started when the specific card is inserted).

   All PC Card Control features are available from the system tray icon; it gives quick and easy access to all card control functions, information about card(s) and its configuration.

2. (MCView) - is a utility for quick and easy access to several memory card operations.

   MCView allows you to format, erase, and eject card(s), as well as edit card contents directly from HEX editor, read/write cards formatted by Microsoft FFSII standard, easy copy files to/from card using standard Drag-n-Drop or Copy-Paste operations, etc.

PC Card Control

PC Card Control Main Window

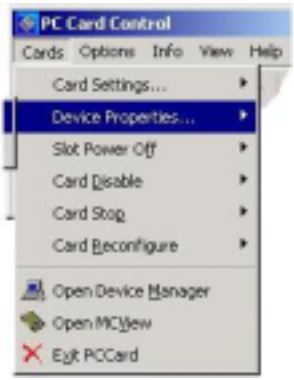
When you open PC Card Control, appears a window similar to shown below. It has a menu bar, optional tool bar, optional status line, and a graphical representation of your PC Card sockets and installed cards:

Figure 7: PC Card Control Main Window

Note: The exact content of menus is context specific and depends from selected User Level and inserted PC Cards.

Menu “Cards”

The **Cards** menu lets you view/edit PC Card settings. Stop or power off a card, reconfigure an installed card, and format a storage card. Note that the content of **Cards** menu may vary, depending on the installed cards.



Cards Settings

Card Settings dialog consists of several property sheets:

Application Launch page specifies application which should be started when specified card is inserted:

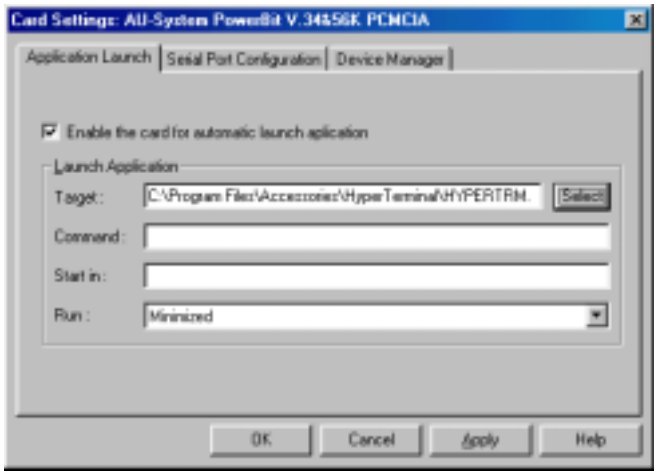


Figure 8: Card Settings (Application Launch) Dialog

Serial Port Configuration page specifies serial port that should be assigned to the specified card.

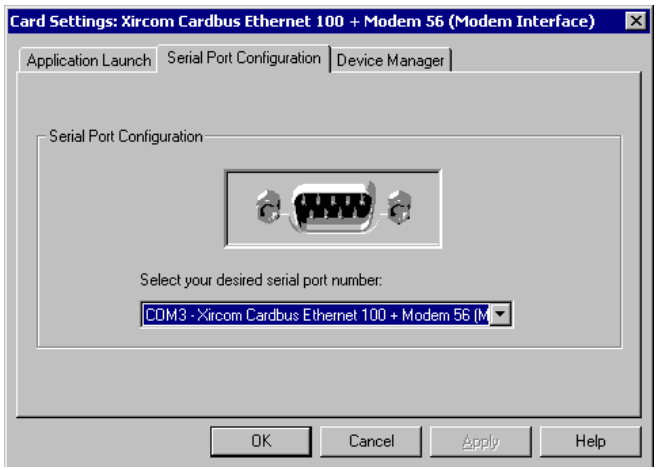


Figure 9: Card Settings (Serial Port Configuration) Dialog

Device Manager page specifies Device Manager Settings for the selected card.

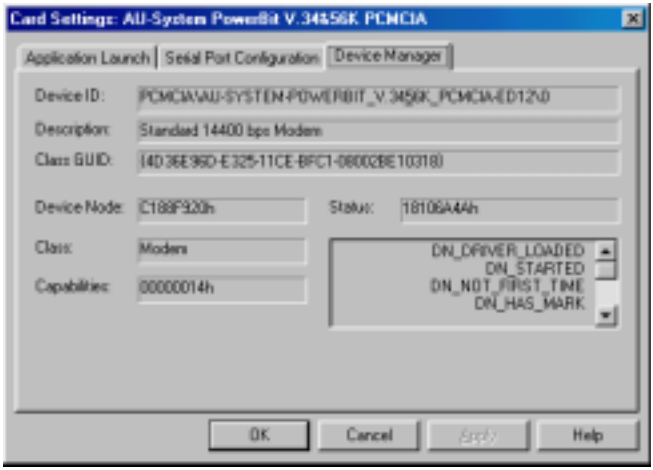


Figure 10: Card Settings (Device Manager) Dialog

Device Properties

This is just shortcut which opens System Device Manager dialog related to specific device.

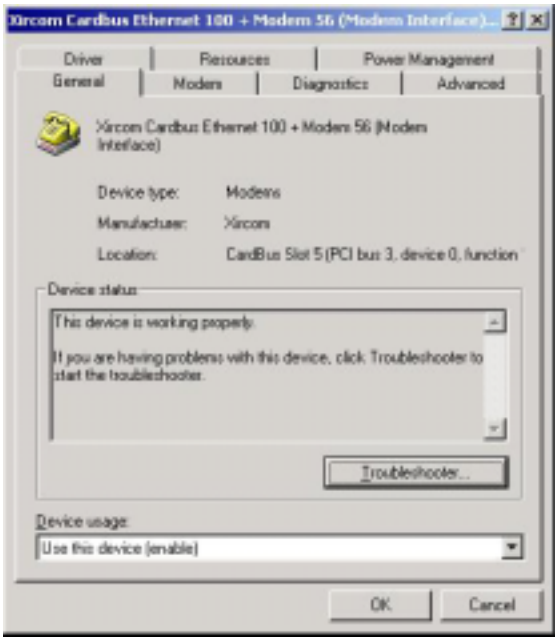


Figure 11: Device Properties Dialog

Slot Power Off

Whether this menu entry is available or not depends on the inserted PC cards and may also be limited by your system manufacturer.

Command switches the power for the PCMCIA slot **OFF**. This feature enhances user control over cards inserted in slots (or, built-inside of notebook) preventing PC Cards from consuming system resources or battery power. Use Slot Power ON option or simply remove and reinsert the PC Card to exit Slot Power Off state.

Card Disable

Disable the card function device node as you will do it in the Device Manager.

Card Stop

Remove the card function device node in the Device Manager. To prevent data lost, it's recommended that you remove the PCMCIA Card from slot only after all card functions are stopped.

Cards Reconfigure

This command allows reconfiguration of PC Cards.

This is logically the same as a card removal and card reinsertion. If you have changed the configuration of a PC Card, you have to tell CardWare to reconfigure the card.

There are two ways to reconfigure a PC Card:

1. Choose 'Cards | Reconfigure' from the menu. Then select the socket that contains the card you would like to reconfigure.

2. Double-click on the card image in the socket.

Open Device Manager

The command opens the System Device Manager.

Open MCView

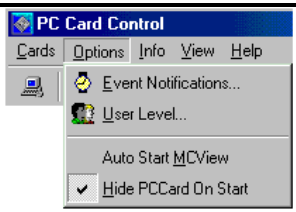
Toggle, the command starts MCView if it isn't started and closes MCView if it is started.

Exit PCCard

This command minimizes PC Card Control to Tray icon.

Menu "Options"

The Options menu contains various CardWare and PC Card Control preference settings.



Event Notifications

Select **Event Notifications** to instruct CardWare to interrupt your work when the following events occur:

1. Card insertion/removal
2. Battery low or dead

CardWare can respond to each event with up to three actions:

1. Restore the Card Control window.
2. Display an appropriate message.
3. Play a WAV file.

Selecting **Sound File** associates a WAV file with each event.

User Level

This dialog lets you specify a user's skill level. Every menu item in CardWare has associated user level. A menu item will be shown only for user of that level or for more experienced user level. This feature helps less experienced users to avoid potential problems.

Auto Start MCView

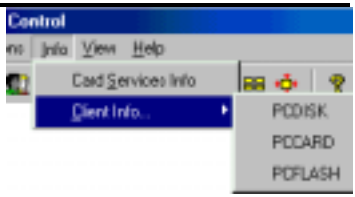
If this option is on, then MCView will be started automatically on PCMCIA memory card insertion.

Hide PCCard on Start

If this option is **ON**, then PC Card Control will start as an icon in the system tray area only. If this option is **OFF**, then also main PC Card Control window will be started.

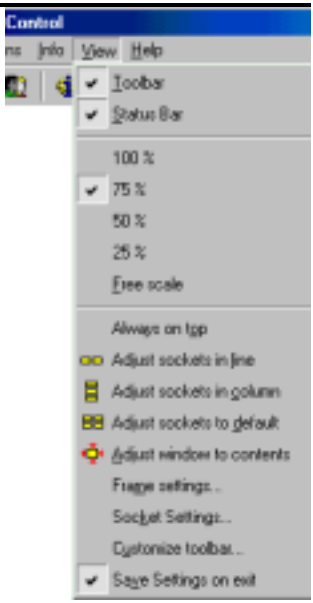
Menu “Info”

Info menu provides information about installed version of Card Services and Card Services clients.



Menu “View”

The **View** menu lets you change the size and placement of your view of the slots. CardWare offers several different sizes of images of the slots and cards themselves



Toolbar

The toolbar is a row of buttons that allow quick access to some of the common functions for scaling and aligning images of your PC Card slots. When **Toolbar** is checked, the toolbar appears below the main menu.

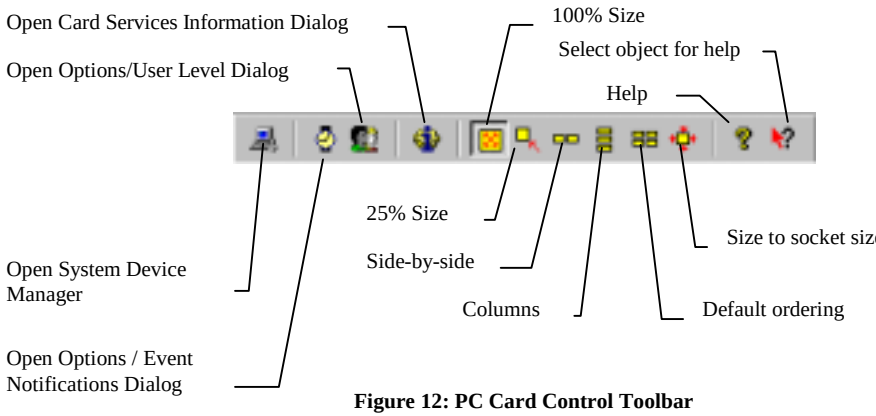


Figure 12: PC Card Control Toolbar

Status Bar

The status bar displays information on the current view. When the item is checked, the status bar appears at the bottom of the PC Card Control window. When not checked, the CardWare display area is smaller.

Percentage

The check mark indicates the current sizing as a percentage of the default size.

Free scale

You can manually enter the size in percents.

Always on top

Checking this option makes CardWare always visible. Even when you are using another application, the card and slot representation is visible.

Adjust sockets in line

Checking this option places the sockets side-by-side.

Adjust sockets in column

Checking this option places the sockets one above the other. This is the default arrangement.

Adjust sockets to default

This option places the sockets in a column, returns the sockets to their default size, and sizes the window to the socket size. If you have multiple sockets, but not all are visible, selecting this option places all of them into visible area.

Adjust window to contents

This option sizes the window so the sockets are centered inside of the window at its minimum size.

Frame settings

Selecting this option pops-up a window with the current settings for size, location and alignment of the sockets.

Socket Properties

PC Card Control pops up the Socket Properties dialog box.

Save settings on exit

Checking this option causes PC Card to use the last used settings each time it starts.

Getting Help in PC Card Control

PC Card Control has a powerful online help system that gives you detailed information on all topics. You can get help by choosing **Help** from the main menu or by simply pressing the F1 key whenever you need help. If you press Shift-F1, the cursor changes to a question mark and you can point to the region for which you need help.

Using Mouse in PC Card Control

You can use the mouse for send several command to PC Card Control:

- To reconfigure the card, make a **left double-click** on the card image in the main window. It's the same as selecting Cards | Reconfigure.
- To show a card description, click the card name with **the right mouse button** and hold down the button.

- To show device information, click and hold the **right mouse button** on the device name (below the card image) in the main window.
- To edit Socket Settings, make a **right click** (or **left double-click**) on the socket image between card (socket) name and device name fields in the main window. It's the same as selecting View | Socket Settings...
- To edit Frame Settings, make a **right click** (or **left double-click**) on frame image between socket images in the main window. It's the same as selecting View | Frame Settings...

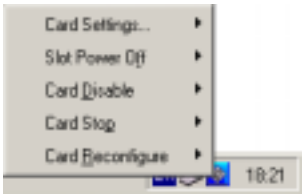
PC Card Control Tray Icon

When PC Card Control is started, a small icon appears in the system tray area.

The PC Card Control tray icon, a small representation of a PC Card Control, is in the system tray area of the Windows taskbar. When your cursor rests on the PC Card Control tray icon for a few moments, a tooltip pops up, saying **CardWare Control.** You can activate program functions by clicking the left or right mouse buttons. Double-clicking with the left mouse button opens PC Card Control.

Left Single Click

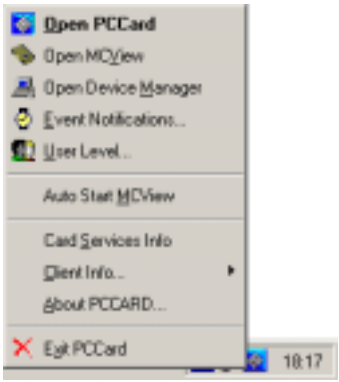
If you click once with the left mouse button on the PC Card Control tray icon, a command menu opens, similar to this:



This menu varies, depending on the kind of PC Card(s) currently inserted. This is the same menu as the PCCard Main Window “Cards” menu (see description in chapter Menu “Cards”).

Right Single Click

If you right click once on the PC Card Control icon in system tray area, a list of CardWare control options pops up:



You can choose from following options:

Open PCCard -	Open the PC Card Control Main Window (same function as left double-click)
Open MCView -	Start MCView. See description of Memory Cards Viewer below.
Open Device Manager -	Opens the System Device Manager.
Event Notifications -	Opens the CardWare Event Notifications window (shown on page **Error! Bookmark not defined.**)
User Level -	Opens the dialog for specifying the user experience: Beginner, Intermediate or Expert.
Auto Start MCView -	Option to specify if the Memory Card View is started when the memory card is inserted
Card Services Info -	Provides information about Card Services
Client Info -	Provides a list of the currently loaded client drivers
About PCCard -	Gives you information about PC Card Control
Exit PCCard -	Turns off PC Card Control

Left Double Click

Left double click on PC Card Control tray icon opens PC Card Control for Windows.

Memory Cards Viewer (MCView)

MCView is a memory cards control utility designed as a GUI application. Following memory card operations are available from MCView interface.

- Gather card information
- Raw access to card memory
- Edit card contents directly with HEX editor
- Read/Write cards formatted by Microsoft FFSII
- Easy copy files to/from card using standard Drag-n-Drop or Copy-Paste operations
- Re-assign drive letters
- Format card
- Erase card
- Eject card (if your adapter supports this operation).

MCView Main Window

MCView main window consists of two panes – left and right.

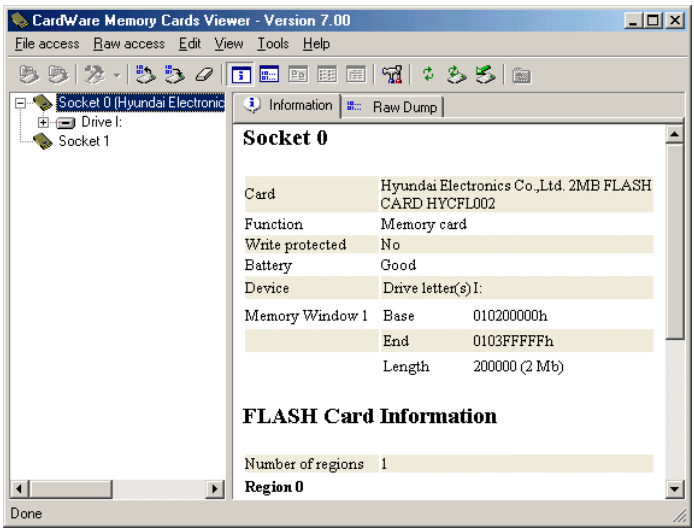


Figure 13: MCView Main Window

The left pane represents explorer-style devices/folders tree. All available PC Card sockets reside on upper level.

If any memory card is inserted into the socket, its name will be shown on the same level with the socket. The next level represents a drive, assigned to the card. If the card is formatted for any supported file system (like FFSII or FAT), and if it contains any directories structure, the tree of directories will be shown under the drive item. The right pane is used to show card information, card's memory raw dump, files stored on the card, etc. In order to choose one of the information sub-panes, you just have to click on the corresponding tab at the top of right pane.

Gathering Card Information

In order to gather any card information, you first should insert memory card to one of the available PC Card sockets, wait until the end of card installation process and then open the MCView window. MCView supports Windows PnP notifications and will detect inserted card automatically without additional user intervention.

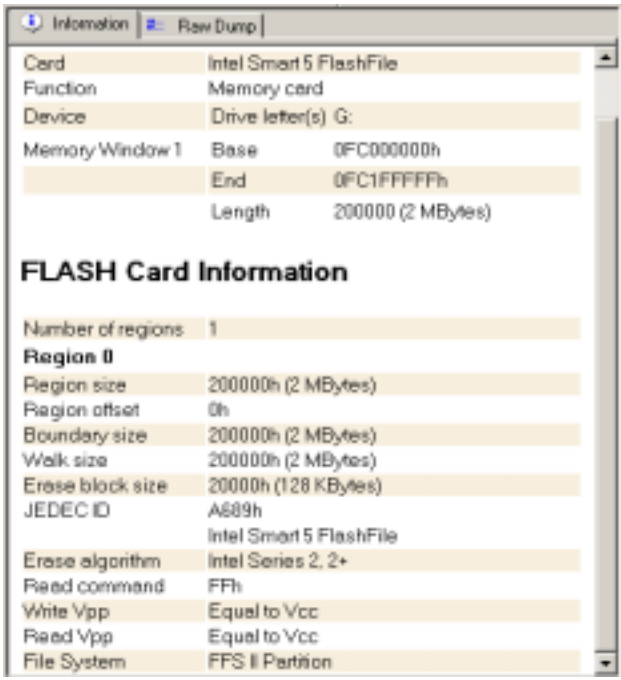


Figure 14a: Card Information

If there is no card inserted to one of the supported PC Card sockets, MCView will show 'No supported memory card detected' in the 'Information' sub-pane. All other sub-panes ('Raw dump', 'File list', etc.) will be unavailable.

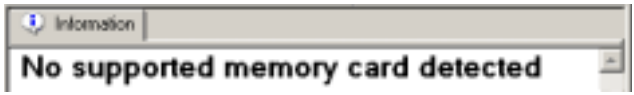


Figure 13b: Alternative Info…

Depends on the type of the card (FLASH or SRAM), different card information will be shown.

For FLASH cards, it's usually:

- Name or Manufacturer of card;
- Function;
- Assigned drive letter;
- List of memory windows;
- List or regions with detailed information for each region like size, offset, etc.

For SRAM cards, the information is similar except that the description of each region is less detailed. It contains just region size and region offset.

For ATA cards, the information of the socket is the same, plus it shows specific ATA card information, e.g.:

- Serial number
- Firmware revision
- Model number
- Number of cylinders
- Number of heads
- Number of sectors per track
- Current capacity in sectors
- Etc.

ATAPI cards additionally show decoded ATAPI information, if present:

- Device type
- Removable media
- ATAPI version
- Vendor information
- Product ID
- Product revision level

Gathering Drive Information

If card inserted in the socket is formatted with one of the supported formats (FFSII or FAT, for example), MCView will be able to show a drive information table for this card.

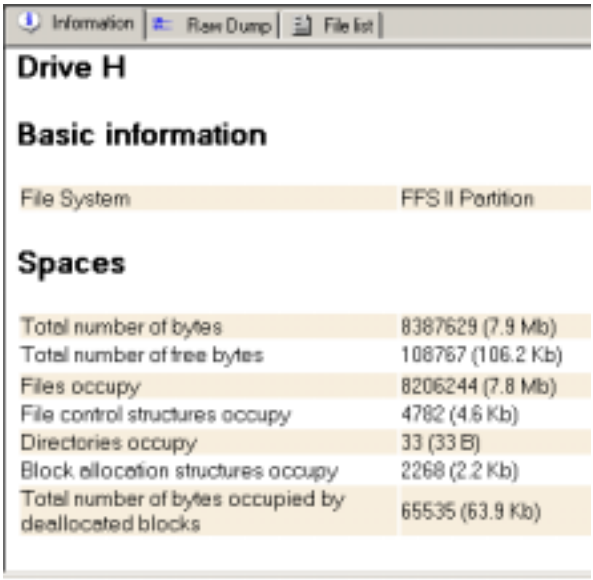


Figure 15: Drive Information

In order to show drive information, you should insert a card, choose 'Information' tab and in the left tree select a drive. If card is not formatted with one of the supported formats, then message "Drive information is unavailable" will be shown.

Independently of type of the card (FLASH or SRAM), drive information will be the same:

Drive geometry:

- Number of cylinders
- Number of tracks per cylinder
- Number of sectors per track
- Number of bytes per sector

Drive spaces:

- Total number of bytes

- Total number of free bytes
- Files occupy (for FFSII only)
- File control structures occupy (for FFSII only)
- Directories occupy (for FFSII only)
- Block allocation structures occupy (for FFSII only)
- Space occupied by de-allocated blocks

Raw Dump

Raw dump of card's memory is available whenever card is inserted into the PC Card socket.

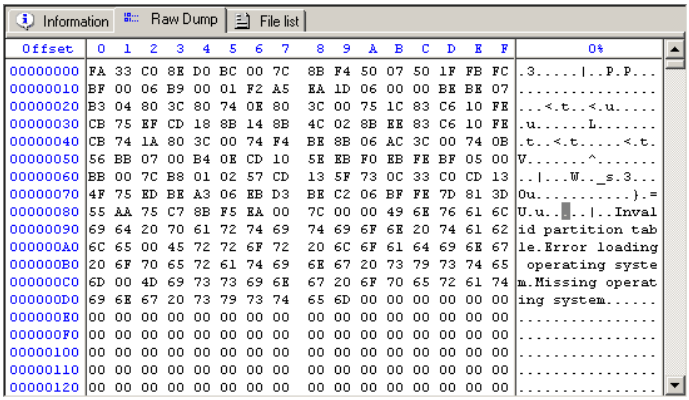


Figure 16: Raw Dump

Raw dump is only the physical view of the card's memory. The window where raw dump is shown contains three columns. The first column represents offset on the card, the second column contains hexadecimal view of card's memory, and the third column contains ASCII view of cards memory. There is a difference between raw dumps for SRAM and FLASH cards. For SRAM cards and FLASH cards without FTL format, raw dump is actually the physical dump of card's memory. For FLASH cards with FTL format, the raw dump can be 'physical' and 'logical'. Logical dump represents card contents 'over' the FTL marks and does not include FTL-specific data. You will see a card like formatted floppy disk. Physical dump will show the actual physical dump of the card's memory as with SRAM cards or FLASH cards without FTL. To switch between raw dump modes, you should choose menu 'Tools | Options', select 'Read/Write' pane and press 'Enable FTL support' button. To enable FTL support for read/write raw operations, button should be in pressed state (checked).

File List

'File list' information sub-pane becomes available when inserted card is formatted with one of supported file system formats, like FAT or FFSII.

Information can be viewed in three different formats:

- Icons
- List
- Details

Using this pane, you can 'walk' through directories structure on the card to see its contents.

Card Access

MCView supports two types of operations named 'File access' and 'Raw access'. File access operations provide access to a card on drive/file system level. Raw access operations provide access to a card on physical (binary) level.

File access operations:

- Open
- New
- Rename
- Delete
- Properties
- Assign drive letter
- Force media change
- Format card
- Full drag'n'drop and cut/copy/paste support
- Eject card

Raw access operations:

- Read/Write raw data
- HEX Editor
- Erase card
- Go to
- Find data

Refer to MCView help file for obtain more detailed information

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A P P E N D I X A

CardWare Files

CardWare consists of a set of programs, each with a specific function. Most are drivers that are loaded as operating system extensions.

Card Services Mapper

CSMPR.VXD

Description	CSMPR.VXD is Card Services Mapper for Win32 applications. It is the interface between the Socket Services driver and the various cards and system software that you use in your computer. The driver is responsible for resource management (in cooperation with the Windows resource manager) and client notification. CSMPR.VXD allows to call Card Services (PCCARD.VXD) from GUI or console applications. If Win32 application registers self Card Service client, CSMPR allows PCCARD to call Win32 application client callback. This is NOT a utility program.
Location of installed file	%SystemRoot%\system\

Kernel Mode Driver

GENCARD.VXD

Description	GENCARD.VXD is generic PCMCIA card driver. Windows does not configure card if INF/driver is missing. GENCARD.VXD can be registered for a card w/o INF/driver file. It causes assigning default configuration for PCMCIA card.
Location of installed file	%SystemRoot%\system\

Data Storage Card Drivers

PCDISK and Memory Technology Drivers (MTDs) add complete PC Card Plug and Play functionality to your computer. They work cooperatively with the operating environment to provide the full functionality of a data storage disk. CardWare storage card features include the following:

- Dynamic assignment of drive letter
- Recognition of data storage cards, using a unique detection algorithm
- ATA, SRAM and flash data storage card support
- Plug-in support for new flash cards
- Built-in support for Flash Translation Layer (FTL) standard
- Built-in support for Flash File System II.
- Supports standard operating system utilities (for file transfer, format, etc.)
- Erase whole card
- Comprehensive on-line help and information
- Raw data transfer (read/write of unformatted data from storage card)

PCDISK.VXD

Description	The memory card client driver (PCDISK) is responsible for disk-like formatted storage card support. From the point of view of Windows, this is a low-level device driver. This driver supports all file systems supported by Windows as well as installable file systems (e.g., flash file systems). The storage card client driver uses media technology drivers (MTDs) for physical access to the PC Card. This is NOT a utility program.
Location of installed file	%SystemRoot%\system\

The table below shows currently available data storage cards and their associated drivers:

Card	Type	MTD Name
Hard disk Flash disk	ATA	PCATA.VXD
SRAM, ROM	Memory	PCSRAM.VXD
Flash memory	Memory	PCFLASH.VXD

PCATA.VXD

Description: PCATA.VXD is the MTD for ATA storage PC Cards (e.g. Integral and SanDisk). It must be used together with PCDISK. APSoft MTDs fully support the PC Card Standards MTD specification, as well as an extended proprietary interface.

This is NOT a utility program.

Location of installed file: %SystemRoot%\system\

PCSRAM.VXD

Description: PCSRAM.VXD is the MTD for SRAM PC Cards. It must be used together with PCDISK. APSoft MTDs fully support the PC Card Standards MTD specification, as well as an extended proprietary interface.

This is NOT a utility program.

Location of installed file: %SystemRoot%\system\

PCFLASH.VXD

Description: PCFLASH.VXD is the MTD for flash PC Cards. It must be used together with PCDISK. APSoft MTDs fully support the PC Card Standards MTD specification, as well as an extended proprietary interface. The flash MTD includes built-in FTL and FFS2 support.

This is NOT a utility program.

Location of installed file: %SystemRoot%\system\

User Interface Files

PCCARD.EXE

Description	This is the CardWare for Windows user interface program. PCCARD Control presents a graphical representation of the PC Card socket(s) and the PC Card(s) you have inserted. PC Card Control lets you edit PC Card definitions, defines their associated devices, reconfigures installed cards, and controls the way PC Card Control runs. This is NOT a utility program.
Location of installed file	CardWare Install directory (default: C:\PROGRAM FILES\APSoft\CardWare\)

MCVIEW.EXE

Description:	CardWare Memory Cards Viewer. It is a GUI application that gives user access to all memory card operations through a standard user interface.
Location of installed file:	C:\Program Files\APSoft\CardWare\

CSDLL.DLL

Description	CSDLL.DLL is Card Services interface library. Any Win32 application can access Card Services via DoCS function call
Location of installed file	%SystemRoot%\system\

MCDLL.DLL

Description	This DLL implements all memory card operations for MCVIEW application. This is NOT a utility program.
Location of installed file	%SystemRoot%\system\

MCUNINST.DLL

Description	Memory Cards Viewer uninstallation library
Location of installed file	%SystemRoot%\system\

CARDWARE.CHM

Description:	PCCARD Help file.
Location of installed file:	C:\Program Files\ APSoft\CardWare\

MCVIEW.CHM

Description:	CardWare Memory Cards Viewer Help file.
Location of installed file:	C:\Program Files\ APSoft\CardWare\

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A P P E N D I X B

Helpful Information

How CardWare Recognizes a Memory Card

CardWare recognizes memory card with help of Windows PnP subsystem. Windows automatically detects identification of PCMCIA card and asks CardWare's driver to handle such cards.

Troubleshooting

Occasionally, problems occur with new software because of incompatibilities with your system's BIOS. Older BIOS versions with limited PC Card support may interfere with CardWare. In many cases, updating your BIOS to the latest release can reduce the potential for problems. Many portable computers have the BIOS in flash memory, which can be easily updated.

Mouse driver interference

Erratic movement of the mouse, or interferes with PC Card activity is usually caused by assigning the card to the COM port corresponding to the COM port of the mouse (e.g., COM1 and COM3, or COM2 and COM4).

PC Card Control does not notify you of low or dead battery

Be sure the 'low' or 'dead battery' beep warning is enabled in PC Card Control's **Options | Event...** menu. Also, be sure your speaker is turned on.

No audio notifications

Remove the card from the socket and make a visual inspection of the card and socket rails to insure that there is nothing that could obstruct a connection. If there is an obstruction, remove it and reinsert card FIRMLY. Also, make sure your speaker is not turned off.

Frequently Asked Questions

Which Operating Systems are currently supported?

CardWare 7.0 supports Windows 98, Windows 98SE and Windows ME operating systems.

How is hot swapping of cards handled?

An interrupt is generated by the system on insertion and removal of a PC Card. This interrupt is used to either flag that the card needs to be configured or released.

What file formats do you support with memory cards?

Currently we support FAT for SRAM cards. For FLASH cards we support Disk-like FAT, Microsoft Flash File System II (FFSII) and Flash Translation Layer (FTL) with any file system supported by Microsoft Windows.

How are you going to support new cards as they are released?

For a card to comply with PC Card Standards, it must have a Card Information Structure (CIS). Since our software uses the CIS information to configure the card, any card that is compliant with PC Card Standards is automatically recognized and supported by our software.

In addition, APSoft has established a Card Review Program designed to promote the review and testing of card manufacturers' CIS with CardWare.

How do you update the system registry? What is the information format so that I (end-user) can modify or troubleshoot it?

When a card is configured specifically for the first time, CardWare stores this configuration information in the system registry. You can edit the registry with the registry editor, REGEDIT. APSoft recommends that only service personnel personnel or advanced users attempt to edit the system registry.

List of Registry Key

HKEY_LOCAL_MACHINE\Software\APSoft\CardWare,
HKEY_LOCAL_MACHINE\Software\APSoft\CardWare\V700\CardWare Memory Cards Support,
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\VxD\:

a. CsMpr
b. PCAta

c. PCDisk
d. PCFlash
e. PCSram

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run\
PCCARD
HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall\
CardWare
HKEY_CURRENT_USER\Software\APSoft\CardWare
HKEY_CURRENT_USER\Software\APSoft\MCVIEW

Legacy Devices Resource Assignment

The industry-standard PC AT bus uses a scheme of permanent device resource assignments, shown below:

Device	Interrupt	Address (hex)
COM1	4	3F8-3FF
COM2	3	2F8-2FF
COM3	4	3E8-3EF
COM4	3	238-2EF
LPT1	5	3BC-3BF (monochrome display and printer adapter only)
LPT1/LPT2	7	378-37F
LPT2/LPT3	5	278-27F
VGA	-	3C0-3CF, 3D0-CDF
IDE HDD Primary Secondary	 14 15	1F0-1F7, 3F6, 3F7[1]
SCSI HDD	11	270-277
Floppy drive	6	3F2, 3F4, 3F5, 3F7[1]
PS/2 mouse	12	-

How to Manually Uninstall CardWare

WE WILL NOT ADVISE YOU TO REMOVE IT MANUALLY

If you really need to do it you have to:

1. Shut down PCCARD.EXE and MCVIEW.EXE (if open)
2. Remove the entire registry tree
   HKEY_LOCAL_MACHINE\Software\APSoft\CardWare,
   HKEY_LOCAL_MACHINE\Software\APSoft\CardWare\V700\ CardWare Memory Cards Support,
   HKEY_CURRENT_USER\Software\APSoft\CardWare and
   HKEY_CURRENT_USER\Software\APSoft\MCVIEW
3. Remove the following keys from
   HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\VxD\:
   a. CsMpr
   b. PCAta
   c. PCDisk
   d. PCFlash
   e. PCSram
4. Remove the registry value:
   HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run\ PCCARD
5. Remove the registry key:
   HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall\ CardWare
6. Delete subdirectory C:\Program Files\APSoft\CardWare.
7. Remove from %windir%\System following files:
   a. mcdll.dll
   b. MCUninst.dll
   c. pcata.vxd
   d. pcflash.vxd
   e. pcsram.vxd
   f. pcdisk.vxd
   g. csdll.dll
   h. gencard.vxd
   i. Csmpr.vxd
8. Delete subdirectory %windir%\Start Menu\Programs\CardWare.
9. See to the C:\CONFIG.SYS and if you find REM ## CW7 ## marks then remove them.

How to Get Technical Support for CardWare for Windows 98/ME

Please send an e-mail in English (we can't process technical support questions in any other language) to technical support (support@tssc.de).

In your request please specify:

1. CardWare version exactly as it appears in C:\Program Files\ APSoft\CardWare\README.TXT.

2. Where and when did you bought your version, your serial number or license number.

3. Description of your problem.

4. If problem is related with particular card please specify the card name and manufacturer exactly as it appears on the card.

5. If you have troubles with card drivers please specify an exact driver version and URL where you got the driver.

6. In order to help you collect technical information about your computer, APSoft designed a specialized PC analyzer: the PCScope.

   For run PCScope please connect to http://www.tssc.de/support/support_cw98.htm and follow instructions.

   PCScope will create file C:\CWSUPRT.REP in root of your disk C:\. Please attach this file to your support request.

   Alternatively, you can collect required technical info manually as described in following section. If you created and attached CWSUPRT.REP to your e-mail, please ignore following section.

Please attach to your e-mail following files:

1. Please run REGEDIT, go to HKEY_LOCAL_MACHINE window and change to following key:

   \Enum\PCMCIA

   Select command "Export Registry file from Registry menu, create a text file (e.g. pcmcia.reg) and provide this file with your e-mail as an attachment.

2. Please run REGEDIT, go to HKEY_LOCAL_MACHINE window and change to following key:

   \Enum\SCSI

   Select command "Export Registry file from Registry menu, create a text file (e.g. scsi.reg) and provide this file with your e-mail as an attachment.

3. Please, find in your installation directory (e.g. C:\Program Files\APSoft\CardWare\) CW7.log file (if it is exist) and provide this file with your e-mail as an attachment.

Attention!

Do not include text of required files in your e-mail. All support files should be attached. We will not process support requests without files listed above or with content of such files included into e-mail text.

Glossary

Adapter

The hardware that connects a computer bus to PC Card sockets.

Also: Certain PC Cards are commonly called adapters.

Associated

The relationship between a device and a defined PC Card. CardWare uses ***associated*** devices to configure a PC Card with the appropriate system resources.

See also: System Resources, Device

ATA

Acronym for **AT A**ttachment specification. The industrial standard for interfacing to Integrated Drive Electronics (IDE) hard drives and flash drives.

Card

A PCMCIA-compliant card. Also known as a PC Card.

See also: PC Card

Card Definition

Card Definitions are used by CardWare to determine how to configure a PC Card. A definition includes a card name, information from the Card Information Structure (CIS) that is used to recognize the card when it is inserted, and a list of associated devices.

See also: Configure, Card Information Structure, Associated, Device

Card Information Structure

See CIS.

Card Type

The type of the function performed by a PC Card. Examples is: ATA hard drive, Network Adapter, Parallel Port, Serial Port and Other.

See also: PC Card

CIS

PC Cards that complies with industrial standards contains the card information structure (**C**ard **I**nformation **S**tructure) that consists of information about the card, its purpose, and the resources it needs.

The CIS is a memory area inside certain PC Cards. This memory area is divided into Tuples (fields of data) that allow the system and application programs to know what are required to properly use that PC Card.

See also: Tuple

Configure

The act of programming a socket and PC Card for use in a system. When a PC Card is inserted, CardWare uses a card definition to recognize the card. Once a card is recognized, associated devices are used to determine the system resource required and how the card is configured.

See also: PC Card

Device

In CardWare: A named collection of system resources that a PC Card uses when it is configured by CardWare. More generally: A peripheral, or subsystem in a computer system. Examples are hard drives, serial ports and network adapters.

See also: Device type

Device type

The card type the device is intended to support. Card definitions may only be associated with devices of the same type. Different device types use different combinations of system resources.

See also: Associated

DMA

DMA channels are used for highspeed transfer of data. Typically these are used by audio PC Cards. If a PC Card needs a DMA channel, CardWare configures the card socket to route the card's DMA channel signals to an available DMA channel in the system.

IDE

Acronym for **I**ntegrated **D**rive **E**lectronics. Used to describe hard drives with an on-board controller. The interface to the controller is described in the ATA specification.

Installing a PC Card

A process including these steps:

1. Mapping memory ranges from the PC Card into the system memory space (if required).
2. Mapping I/O ranges from the PC Card into the system I/O space (if required).
3. Routing an interrupt from the PC Card to a system interrupt (if required).
4. Routing a DMA channel from the PC Card to a system DMA channel (if required).

Generic

Common PC Cards that conforms to the PC Card specification containing information that identifies each card according to its function. For such *generic* cards, CardWare does not need to develop a specific, individual definition. Instead, CardWare configures the card according to its generic type, using pre-defined devices appropriate to the card's function. Generic card recognition greatly reduces the number of required card definitions and allows a class of cards to be handled in a standard manner with automatic configuration from the first insertion.

CardWare recognizes such common generic card types as ATA data storage, fax/modem, SCSI, and LAN.

GPS

Acronym for **G**lobal **P**ositioning **S**ystem. GPS is a navigational system using satellites. GPS receivers may be implemented as PC Cards. GPS PC Cards typically have a serial port interface.

Hot Docking

Inserting (or removing) a mobile computer into a docking station while both the computer and the docking station are in full power and full functional operating mode. CardWare supports hot docking if the mobile computer has a Plug and Play BIOS that supports hot docking.

Hot Spot

An area on the display screen where clicking with a mouse results in a move to another area of the help file. The cursor changes from an arrow to a small hand when positioned over a hot spot.

Hot Swapping

Inserting a PC Card in the socket while the computer is in full power and full operational mode. All PC Cards support hot swapping; but some software, notably telecommunication packages and network operating systems, do not.

Interrupts

Interrupts are used to get the system's attention. If a PC Card generates interrupts, CardWare configures the card socket to route the card's interrupt signal to an available **I**nterrupt **R**e**Q**uest (**IRQ**) level in the system.

See also: System Resources

I/O Ports

Ports have a port number, or address, and are used to pass information to or from peripheral devices. Port address space is separate from memory address space. CardWare configures PC Cards with I/O ports to use unoccupied port address space.

See also: System Resources

IRQ

See Interrupts.

Memory

Memory is the place used to store information while it is being used. Computer memory is organized as a number on individual locations, each identified by an address. Memory address space is the sum of all locations identified by an address. The memory address space is often much larger than the actual amount of memory available to store data. ***See also:*** System Resources

MTD

Acronym for Memory Technology Driver. An MTD is responsible for manipulating the physical media on a storage (memory or ATA) PC Card. The generic storage card software (PCDISK) uses the MTDs.

Multiple Function PC Card

A PC Card that integrates two distinct functions, such as a LAN function and a modem function, into a single PC Card. There are two styles of cards having more than one function: Those that are designed using the MFC extensions defined in the 11/95 release of the PC Card Standards (these are called MFCs) and those that are designed for the 2.10 release of the PC Card Standards (commonly called Combo Cards).

PC Card

Term used to describe cards compliant with the PCMCIA PC Card Standards. About the size of a credit card, but varying in thickness, these cards plug into a 68-pin socket and expand the capability of your system. PC Cards can add additional storage using memory devices or ATA flash and hard drives. Other types of cards are specialized devices, such as modems, network adapters or GPS receivers. Some cards are actually interfaces through which your system can access even more devices.

PC Card Control

PC Card Control is the program for configuring your PC Cards. To run PC Card Control, click on the Icon in the CardWare group or left double click on tray icon.

PCMCIA

Personal **C**omputer **M**emory **C**ard **I**nternational **A**ssociation has created and documented a series of specifications to allow you to plug-in and use almost any compliant PC Card.

Recognized

To CardWare, recognized means that a PC Card is identified when it is inserted. A PC Card must be ***recognized*** before it can be configured using an associated device.

See also: Associated

Registered

CardWare can identify an inserted card using information registered in an internal database.

Socket

The 68-pin slot, into which the PC Card is inserted to make physical and electrical connection to the PC Card adapter.

See also: Adapter

System Resources

A system interacts with its world through four resources:

- Memory
- Interrupts
- I/O ports
- DMA channels

Devices describe the set of resources used by a PC Card once it is configured.

See also: I/O, Interrupts, Memory

Tuple

Tuples are special fields in the internal memory of certain PC Cards. PCMCIA-compliant tuples describe the configurable characteristics of Memory-Only and I/O Cards.

See also: CIS

WAV Files

A *WAV* (pronounced *wave*) file is a file of digitized sound (like on a CD). Because the extension of the file name (the three characters following the period in the file name) is WAV (e.g. SOUNDS.WAV) these segments of sound have become known as WAV files.

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